

rejection on this basis requires that each and every limitation of the claims be found in Sakuragi *et al.* This is not the case.

Sakuragi *et al.* discloses an electron-beam generating apparatus in which electron beams are uniformly output at high speed from a multi-electron beam source. In particular, in order to drive a multi-electron beam source in which cold cathode devices are wired in a matrix, a voltage for quickly charging parasitic capacity is applied by a charge-voltage apply circuit in addition to a driving current being supplied from a controlled current source. This makes it is possible for electron-emitting devices to respond quickly. After the parasitic capacity is charged, the charging-voltage apply circuit is turned off, and the electron-emitting devices are driven by the controlled current source. Thus, the cold cathode devices can be driven quickly, without being influenced by wiring resistance. The Figure 4 embodiment of Sakuragi *et al.* includes a pulse width modulator 8 that outputs a voltage signal obtained by performing pulse-width modulation on the image data stored in line memory 6. The voltage signal is supplied to a voltage amplifier 21 and inverter 22. The voltage amplifier 21 amplifies the voltage signal up to a level of a charging voltage. In this arrangement, because the parasitic capacity is charged at high speed by virtue of voltage amplifier 21 and rectifier 31, the driving current from constant current source 11 is supplied immediately to the electron-emitting devices.

Sakuragi *et al.* does not disclose an arrangement including pulsewidth modulation circuitry for generating pulsewidth modulated video data, and driver circuitry for latching the pulsewidth modulated video data and driving said signal lines in accordance with the latched data as set forth in independent claims 1 and 9. Likewise, Sakuragi *et al.* does not

disclose the steps of generating pulsewidth modulated video data; latching the pulsewidth modulated video data; and driving the signal lines in accordance with the latched data as set forth in claim 18. Sakuragi *et al.* makes no provision for latching the output of pulsewidth modulator 8 nor would there have been any suggestion to one of ordinary skill in the art to do so. For at least these reasons, Sakuragi *et al.* cannot anticipate the subject matter of claims 1, 9 and 18 or the claims that depend therefrom.

Wood (U.S. Patent No. 6,288,695) is cited for its teaching of a plasma display device and the office action in essence contends that because Wood demonstrates the existence of a plasma display device, it would have been obvious to incorporate such a device into Sakuragi *et al.* While not acquiescing in this contention, Wood does not remedy the above-noted deficiencies of Sakuragi *et al.* and thus the combination of Wood and Sakuragi *et al.*, even if proper, would not have resulted in the claimed subject matter.

Applicant also traverses the rejection of dependent claims 3, 4, 7, 13, 14 and 16 as allegedly being obvious. First, Sakuragi *et al.* is deficient with respect to the claims from which claims 3, 4, 7, 13, 14 and 16 depend for the reasons set forth above. Second, with respect to claims 3, 4, 13 and 14, Applicant agrees that programmable logic arrays and application specific integrated circuits are known. However, the office action provides no evidence other than generalized motivations such as improving functionality, simplifying the circuitry, etc., that it would have been obvious to use such components in the context of the claimed subject matter. With respect to claims 7 and 16, there is again only reference to generalized motivations such as simplifying the design in support of the obviousness rejection. As explained in the specification of the subject patent application, by providing the pulse width modulation circuitry "off-chip" relative to the driving

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circuitry, high density logic circuitry can be used, thereby permitting improved display resolution. No such arrangement is taught or suggested by the applied art.

New claims 22-25 are added for the Examiner's consideration. The subject matter of these new claims is fully supported by the original disclosure and no new matter is added. These new claims contain features not shown or suggested by Sakuragi *et al.* and thus these claims are believed to be allowable.

The pending claims are believed to be allowable and notification to that effect is respectfully requested.

Respectfully submitted,

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A handwritten signature in cursive script, appearing to read "Michael J. Shea", is written over a horizontal line.

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**Version marked to show changes made**

Claims 1, 9 and 18 have been amended as follows:

1. (Amended) A driver circuit for driving signal lines of a matrix type display device, comprising:  
  
pulsewidth modulation circuitry for generating pulsewidth modulated video data;  
  
and  
  
driver circuitry for latching the pulsewidth modulated video data and driving said signal lines in accordance with the latched [pulsewidth modulated video] data.

9. (Amended) A matrix type display device comprising:  
  
display elements connected to row lines and column lines; and  
  
a driver circuit for driving said column lines, said driver circuit comprising:  
  
pulsewidth modulation circuitry for generating pulsewidth modulated video data; and  
  
driver circuitry for latching the pulsewidth modulated video data and driving said column lines in accordance with the latched [pulsewidth modulated video] data.

18. (Amended) A method of driving signal lines of a matrix type display device, comprising:  
  
generating pulsewidth modulated video data; [and]  
  
latching the pulsewidth modulated video data; and  
  
driving said signal lines in accordance with the latched [pulse-width modulated] data.